Newly funded project

"Uganda pig genetics"

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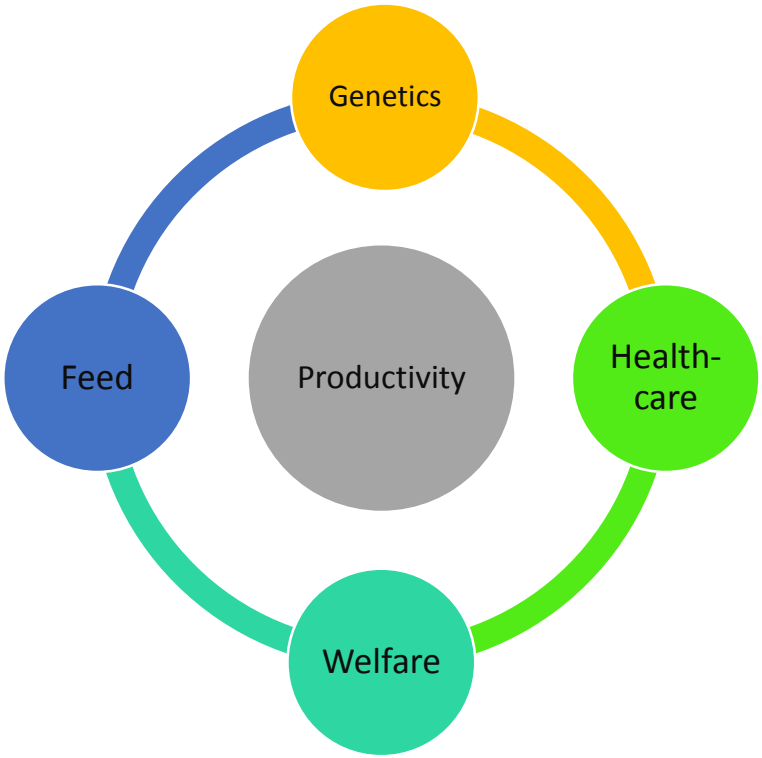
Uganda Livestock Sector Consultative Meeting, Kampala, 14 March 2017

Background – motivation to project

During the varied assessments, many stakeholders expressed interest in:

- an evidence base on the most appropriate pig breed-type for the local production systems / environments
- access to breeding pigs of known breed-type, high genetic quality



Background – current state of knowledge

Limited data on pig productivity exists

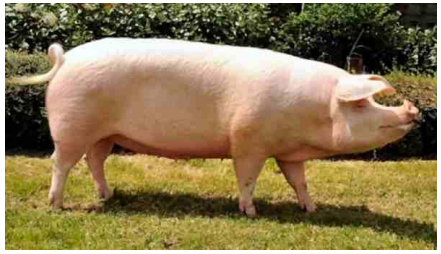
Organisation	Type of data - 2015
NAGRC&DB	Data on Camborough herd for last 2-3 years. Herd comprises 30-40 sows (Camborough 22), 6 boars (PIC terminal sire line).
KCCA	Data on LW/LR crossbreeding herd for last 2 years. Herd comprises 20 sows (LW), 4 boars (LR)

No data on local breeds; no data on pig performance on-farm

Background – pig genetic diversity in Uganda

Large White

Landrace



PIC Camborough 22

Local

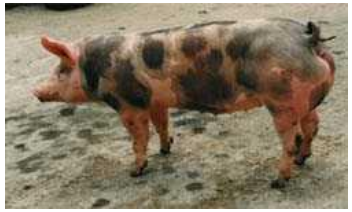
Synthetic LW, LR, White Duroc

Plus structured & unstructured crossing between these

Duroc?

Cross-bred descendants of Duroc?

Pietran?



Cross-bred descendants of Pietran?

Saddleback?

Other?

This project

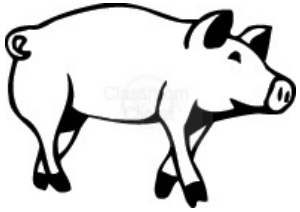
Sustainable intensification of the pig value chain in Uganda – for improved rural livelihoods and enhanced food security	
Partners	➢ International Livestock Research Institute ➢ National Animal Genetic Resources Centre & Databank (NAGRC & DB), Uganda ➢ University of Natural Resources and Life Sciences (BOKU), Austria
Duration	July 2017 to July 2020
Donors	Austrian Development Agency Livestock CRP
Objective	To increase the productivity and profitability of the Ugandan smallholder pig enterprises, through use of the most appropriatepig genetics

Activity 1: Evaluate the profitability and productivity of different household pig production systems in Uganda

- To create an evidence base for informed decision making by pig keepers

- Approach:
  - Monitoring 150+ pig keeping households, 400+ pigs, in for at-least a 14 month period
  - Considering productivity (following through to slaughter); cost-benefit (intra-household)
  - Pig breed-type assignment by a genomic approach

Genomic approach to breed assignment



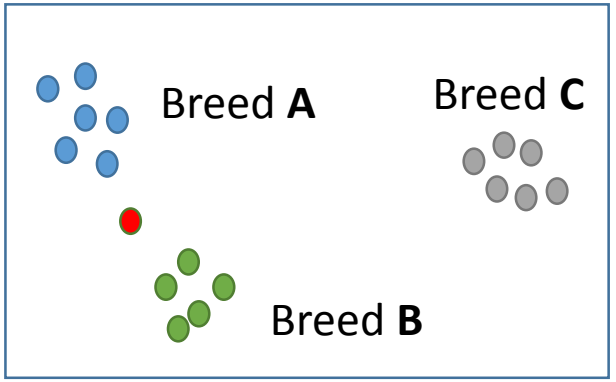
PIG of unknown breed composition

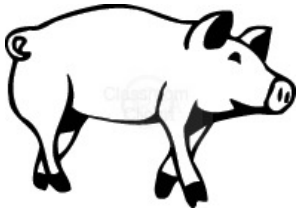
DNA

Illumina PorcineSNP60 (64,000 SNPs)

Genomic analysis

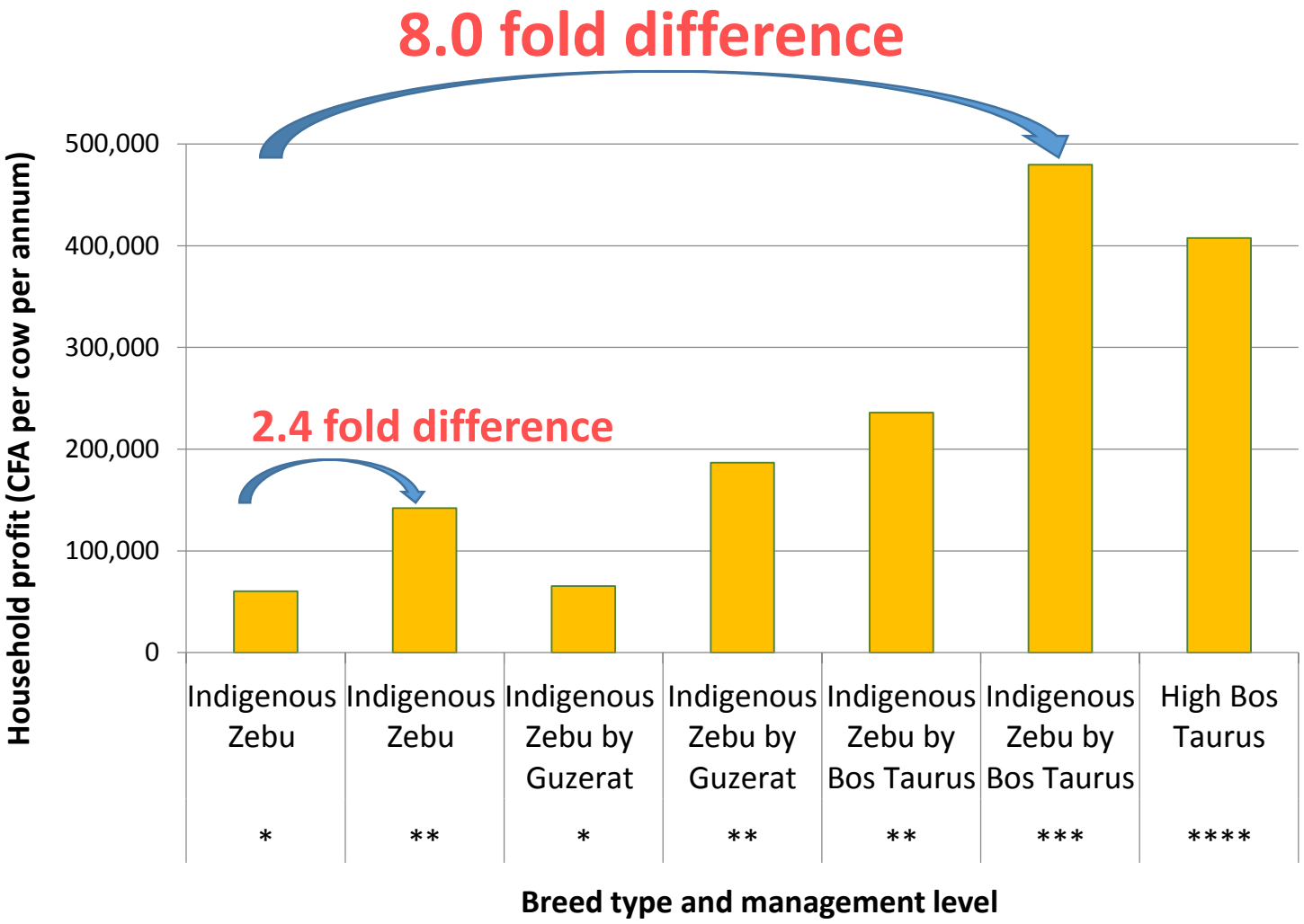
Compare genotypes of pig of unknown breed to pigs of known breed-type (reference populations)





50% breed A
50% breed B

Example result from a similar study in dairy cattle in Senegal

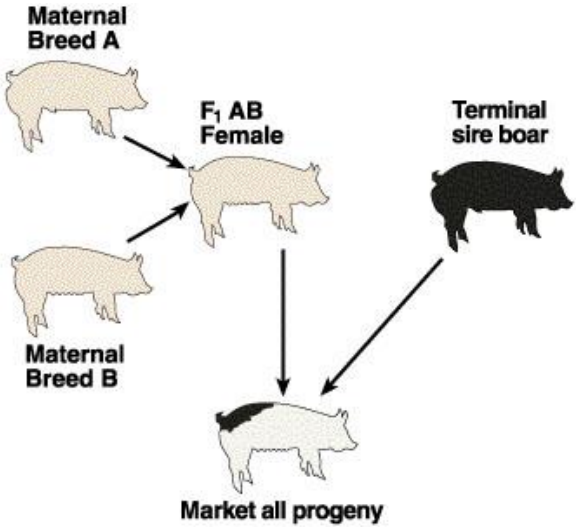


Activity 2: Design, with stakeholders, a genetic improvement strategy for the smallhold pig sector

- To produce pigs which meet the needs and preferences of their women and men keepers and other value chain actors, as well as market demand

Approach to breeding program design

1) derive the breeding goal;
2) assess the state of current breeding strategies, capacities and infrastructure;
3) prepare the breeding plan, with attention to supportive institutional arrangements, public and private sector involvement, and sustainability;
4) plan implementation and ongoing monitoring and refinement



Stakeholder owned and driven

From: http://extension.missouri.edu/p/G2311

Activity 3: Develop, with stakeholders, a scheme for registration of suppliers of pigs of known breed-type

- To allow pig-keepers to confidently access the breed-types they desire

- Approach:
  - Registration scheme will be developed and pilot-tested
  - Led by NAGRC&DB - mandated via the Animal Breeding Act of 2001 to register and certify all animal breeds, breeders and breeding centers

Activity 4: Capacity building of women and men pig keepers, as well as other stakeholders

- Capacity building activities:
  - Training workshops for smallhold pig keepers and other stakeholder such as village boar keepers, artificial insemination service providers, and extension agents
  - PhD student enrolled in BOKU and based locally

- Further dissemination activities:
  - Media, including newspaper and radio
  - The existing multi-stakeholder platforms
  - Policy briefs and discussions.

The most appropriate pig genetics for improved productivity and profitability of the Ugandan smallholder pig enterprises

NAGRC&DB ANIMAL GENETIC SOLUTIONS

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